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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/633,002

08/04/2000

Keiji Ishibashi

2248

832 7590 12/23/2003

BAKER & DANIELS
111 E. WAYNE STREET
SUITE 800
FORT WAYNE, IN 46802

EXAMINER

MARKHAM, WESLEY D

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action

Application No.

09/633,002

Applicant(s)

ISHIBASHI, KEIJI

Examiner

Wesley D Markham

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--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 18 November 2003 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

- a) ☒ The period for reply expires 5 months from the mailing date of the final rejection.
b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.135(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. ☒ The proposed amendment(s) will not be entered because:
(a) ☒ they raise new issues that would require further consideration and/or search (see NOTE below);
(b) ☐ they raise the issue of new matter (see Note below);
(c) ☒ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
(d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: see attached Office Action.

3. ☐ Applicant's reply has overcome the following rejection(s): _____.
4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
5. ☒ The a) ☐ affidavit, b) ☒ exhibit, or c) ☐ request for reconsideration has been considered but does NOT place the application in condition for allowance because: see attached Office Action.
6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
7. ☒ For purposes of Appeal, the proposed amendment(s) a) ☒ will not be entered or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____.

Claim(s) objected to: _____.

Claim(s) rejected: 11-16 and 27-32.

Claim(s) withdrawn from consideration: _____.

8. ☐ The drawing correction filed on _____ is a) ☐ approved or b) ☐ disapproved by the Examiner.
9. ☐ Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____.
10. ☐ Other: _____

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DETAILED ACTION / ADVISORY ACTION

Response to Amendment

1. Acknowledgement is made of the proposed after-final amendment filed by the applicant on 11/18/2003 (with a certificate of mailing dated 11/13/2003), in which the applicant proposed to amend independent Claims 11 and 27. However, this amendment has not been entered because it raises new issues that would require further search and/or consideration. Specifically, the applicant's proposed amendment would require the cleaning gas of the claims to contain at least one of a fluorine atom and a chlorine atom as opposed to a halogen atom in general. This amendment to the claims would alter the scope of independent Claims 11 and 27, and therefore the scope of the claims that depend from them, thereby requiring further search and/or consideration on the part of the examiner.
2. Additionally, the examiner notes that Claims 17 – 20 are listed by the applicant as "withdrawn" in the **Listing of Claims:** section of the proposed amendment. However, Claims 17 – 20 are canceled (i.e., pursuant to applicant's amendment B), not withdrawn.

Response to Arguments

3. Applicant's arguments filed on 11/18/2003, including the DECLARATION of Keiji Ishibashi under 37 CFR 1.132, have been fully considered but they are not persuasive.

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4. First and regarding the 35 U.S.C. 112, first paragraph, rejection of Claims 11 – 14 and 27 – 30, the applicant's argument is drawn to the claims as proposed in the amendment dated 11/18/2003. Since this amendment has not been entered for the reasons set forth in paragraph 1 above, the applicant's argument is moot.
5. Second and regarding the 35 U.S.C. 103(a) rejection of Claims 11, 12, 27, and 28 based on Bluck et al. in view of Dietz et al. and Matsuyama, the applicant argues that Bluck et al. does not correct the shortcomings of Dietz et al. Specifically, the applicant argues that, in the Dietz et al. method, hydrogen gas which will not react with the heating element is used as the cleaning gas, as opposed to the instant invention which uses a very corrosive gas. The applicant then states that Matsuyama teaches activating gases for depositing a film within a chamber rather than removing a deposited film with an activated gas, thereby teaching away from the applicant's invention. In response to applicant's arguments against the references individually, one cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Further, the examiner notes that Bluck et al. does teach chlorine-containing and fluorocarbon etching gases for cleaning chamber walls/components (Col.4, lines 6 – 46). Regarding the Matsuyama reference, the examiner has not argued or stated that Matsuyama teaches removing a deposited film by activating cleaning gases with a hot element – this limitation is taught by Bluck et al. Matsuyama has been cited by the examiner to show that

platinum is a desirable material to use as a hot filament to activate process gases because of its heat and reaction resistance. A platinum hot filament would possess these desirable qualities regardless of whether the filament is utilized to activate deposition gases or to activate etching gases. Additionally and regarding the Matsuyama reference, in certain embodiments, the applicant's claims require activating gases for depositing a film within a chamber (see, for example, Claims 12 and 28); therefore, Matsuyama clearly does not "teach away" from the applicant's claimed invention.

6. Third, the applicant notes that the specific examples provided by Matsuyama describe using a tungsten filament to activate gases such as Si_2F_6 and GeF_4 (Example 5), while the applicant believes that tungsten is not suitable in a situation where a gas containing a fluorine or chlorine atom is used. The applicant then states that Matsuyama would not have recognized that a platinum filament is not etched and is stable when used with such a cleaning gas. In response, the above arguments are simply speculation on the part of the applicant. There is no evidence on the record to suggest that one of ordinary skill in the art, at the time of the applicant's invention, would have expected a platinum hot filament not to function successfully in activating fluorine- or chlorine-containing cleaning gases. Briefly, Bluck et al. teaches using a hot-filament in general to activate gases such as argon, fluorocarbons, chlorine-containing gases, hydrogen, and/or oxygen in order to clean/etch the walls of a reaction chamber (Col.4, lines 6 – 46, Col.6, lines 32 – 67, and Col.7, lines 1 – 6). Since Bluck et al. is silent as to the material used to form the

hot-filament, one of ordinary skill in the art would have been motivated to seek out an appropriate material for this purpose. Dietz et al. teaches that platinum is a suitable material for a hot-filament that is used to activate cleaning gases, and Matsuyama teaches that platinum is a desirable material to use as a hot-filament to activate process gases because of its heat and reaction resistance. Therefore, one of ordinary skill in the art would have clearly had (1) a reasonable expectation of success in choosing a platinum hot-filament to activate the chlorine-containing and/or fluorocarbon cleaning gases taught by Bluck et al., and (2) a motivation to choose platinum as the hot-filament material due to its heat and reaction resistance, as taught by Matsuyama.

7. Fourth, the applicant argues that, even if the cited references could be combined, the resulting structure would not render obvious the applicant's claimed invention. In response, the examiner disagrees. Specifically, the combination(s) of references cited by the examiner reasonably suggest each and every limitation of the applicant's claims (see paragraphs 13 – 18 of the non-final Office Action, paper #12, mailed on 12/10/2002).
8. Fifth, the declaration under 37 CFR 1.132 filed on 11/18/2003 is insufficient to overcome the rejection of Claims 11 – 16 and 27 – 32 based upon Bluck et al. in view of Dietz et al. and Matsuyama as set forth in the last Office Action because of the following. The aforementioned declaration contains two exhibits: (1) a Japanese language document entitled "Examination of Cat-CVD in-situ cleaning" prepared by Keiji Ishibashi, and (2) a certified English language translation of the aforementioned

document. In regards to this document, the applicant argues that, while it was generally known to those skilled in the art that the reaction rate of a wire with a cleaning gas increases as temperature rises, the experimental data indicated to the inventor that when a hot element is heated to a (threshold) temperature or higher, the wire is prevented from being etched, thereby extending its life, which contrary to what one skilled in the art would have anticipated. The applicant then surmises that the same is true for a platinum wire heated to the advantageously low threshold temperature of 400° C or higher and states that a person skilled in the art would have avoided heating a platinum wire to a high temperature in the cleaning gas atmosphere since he would have expected, based on the Ishibashi document, that the platinum wire would be broken in a short time. In response and after careful consideration of the Ishibashi document / declaration, the examiner notes that the only data provided in the document deals with the etching rate of a tungsten wire in an NF_3 atmosphere at temperatures of about 2000° C and about 2500° C. While this data does support the conclusion that a tungsten wire is etched to a lesser degree by NF_3 at a temperature of 2500° C than 2000° C, the extrapolation of this data to infer the behavior of a platinum wire (as claimed by the applicant) is merely supposition. There is no data indicating whether or not a platinum wire has a "threshold temperature", and if it does, what this "threshold temperature" is. The Ishibashi document / declaration is entirely drawn to a tungsten filament, not a platinum filament, and therefore, the data provided in the document is not particularly relevant to the claimed process. Regarding the applicant's statement that

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a person skilled in the art would have avoided heating a platinum wire to a high temperature in the cleaning gas atmosphere since he would have expected that the platinum wire would be broken in a short time, this statement is not supported by the prior art of record (e.g., Dietz et al.'s teaching that platinum is a suitable material for a hot-filament that is used to activate cleaning gases, Matsuyama's teaching that platinum is a desirable material to use as a hot-filament to activate process gases because of its heat and reaction resistance, and Koinuma et al.'s teaching that platinum is unlikely to be etched by a halogen element plasma).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Wesley D Markham
Examiner
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